

# **Knowledge Management and Related Emerging Issues in Organizations: A Systems Thinking using Feedback Loop Analysis**

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## **Abstract**

Since last two decades, knowledge management has emerged as an important aspect for organizational success and is a matter of interest for many organizations. Initially, it was considered as a stand-alone process and the focus was mostly towards technical aspects but later its relation with other issues has also been realized. Some of the studies are available in case study form to explain the implementation process of knowledge management in any organization. This study is based on the integrated approach of literature review and caselets study method that relate the conceptual thinking with the practical implementation of knowledge management and other related issues in various organizations. Secondary data has been used for this study. Issues like change, culture, innovation and crisis management have been raised with a systems thinking using feedback loop analysis.

**Keywords:** change, culture, innovation, knowledge management, knowledge sharing

## **Introduction**

In the initial stage of knowledge management, mostly the focus was on technical aspects and providing IT solutions for business activities, but later it has also incorporated social factors such as communities, personal development, working environment etc. (Gloet and Terziovski, 2004).

Firm success depends on the extent of how it can deal with the environmental uncertainty (Folami and Powers, 2009). Knowledge has been considered as one of the strategic resource of the organization and this strategic resource can also be used for crisis management. Organizations need different kind of knowledge strategy for different kind of crisis situations. According to Wang and Belardo (2009) Strategies for crisis management, knowledge management, and organizational performance are not independent phenomena but they are interrelated with each other. A proper conversion of tacit knowledge into explicit knowledge helps organizations into applying the knowledge in solution finding and to get the benefit of new opportunities and also promote learning in the organization (Fatt and Khin, 2010).

This study is an attempt to understand the relevance of knowledge management (KM) process for organizational success, identify the emerging issues of knowledge management and other organizational success. Total six case lets have been considered for the study that are largely focused on knowledge management and some other related issues like culture, integration, uncertainty. Feedback loop structures (Atwater and Pittman, 2006) have been used for caslets study.

## **Literature Review**

In the current knowledge era, for achieving performance excellence and sustaining that position, it is not enough to focus only on the quality aspects, knowledge management is one of the factors that has emerged as a critical one for organizational success. Organizations can't avoid the importance of knowledge management process if they want to sustain their competitive position (Ribièrè and Khorramshahgol, 2004). KM practices are directly related with organizational performance which was measured in

terms of customer intimacy, product leadership, and operations excellence (Zack *et al*, 2009). To become successful and sustaining the growth in this competitive era, organizations need to understand its capabilities and have knowledge about its competitors and external environment (Gloet and Terziovski, 2004). Knowledge has been defined crucial for growth of any company and one should know where it stands. The lack of knowledge may lead to failure of the company (Mietlewski and Walkowiak, 2007).

Organizations are a kind of complex system where knowledge resides in parts (among individuals) and varies both in content and quality (Sherif, 2006). Some person may have expertise in one thing while lacking the knowledge of other things. More diversity and scope of the knowledge assets within the knowledge repository leads to high possibility of generating new knowledge through aggregation, specialization, generalization or cross-fertilization across domains.

In the complex system environment, integration is one of the important parameter and can't be neglected. Organizations are expected to identify and to know how to integrate pieces of knowledge to foster innovation. An organization may focus on one process over others depending on the type of knowledge to be managed and the degree of changes that renders knowledge assets obsolete (Hansen *et al.*, 1999). The core competitiveness of organizations comes from the ability of its employees to innovate and this ability can be developed using KM process in the organization (Wenhong and Jianhua, 2009).

Interaction among individuals is one of the prerequisite for knowledge creation and transfer in organization. The interaction for the creation or transfer of knowledge is performed by individual employees rather than by the whole organization. Four modes of knowledge conversion (Nonaka and Takeuchi, 1995) take place during interaction among individuals. These four modes are defined as socialization, externalization, combination, and internalization (SECI).

Customer satisfaction is one of the performance parameter and innovation is an important process for satisfying customer needs. Managers' perception about

innovation depends on the level of customer satisfaction (Ruggles and Little, 1997). Innovation should be customer driven for gaining profits and that is possible if the organization has better knowledge of markets and its customers. Organization culture also plays a vital role towards innovation (Nagura and Honda, 2001).

According to Liebowitz (1999), "Knowledge management is 80 per cent about people and cultural change rather than technical development". The statement is further supported by other researchers like Akhavan *et al.*, (2006) and Spender (2006). According to them, culture is one of the critical issues for success of knowledge management process and act as the first barrier for KM. Mathi (2004) has also defined culture as one of the key success factors for implementing KM in organizations.

## **Methodology**

This study has been conducted in two phases. First phase is related to the brief review of literature on knowledge management (KM) issues in particular and other related issues, which are emerging since last two decades and are critical for organizational success. The second phase is about the inductive caselets study that includes cases of various organizations that have successfully implemented KM process. For this study, secondary data have been used like journal papers and websites. The caselets study has been done using the secondary data available in documentary form like research articles and organization's websites. The references for the cases and its related keywords have been mentioned after each case. The key issues during implementation of KM process have been identified and discussed taking support from real life practical case examples. The case lets have been further summarized using feedback loops, a method of systems thinking. The loops have been identified and selected based on the case let situations and the process of implementation i.e. which kind of loop is fit for the particular case let. The feedback loop which is most relevant for the respective caselet has been used for that particular caselet. An innovation is done to interpret each link using interpretive matrix as a tool (Sushil, 2005).

The key issues raised in cases are summarized in a tabular form and discussed.

## **Caselet Study**

Total six caselets have been selected for this study. Each caselet is summarized describing the KM related issues. The keywords from each caselet have been identified and mentioned below each case. Further, suitable feedback loop structure has been used for representing the caselet in diagrammatic form. In the discussion part, all the keywords are represented in tabular form with its importance in caselets.

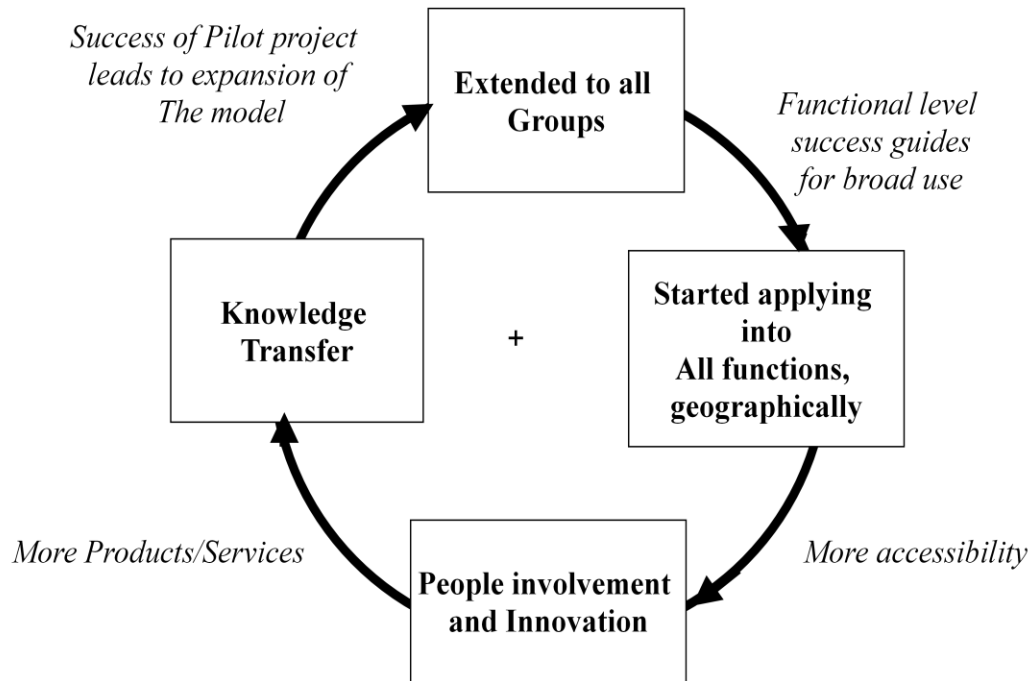
### ***Caselet1 – Microsoft***

Microsoft was founded in 1975. The organization focus on hiring the strong intellect and capable people and this high quality of people is one of the competitive advantages for the organization. Microsoft's internal information technology (IT) group faces pressures to produce software and to adapt to the rapid changes. To fulfill this, the IT group has focused on identifying and maintaining knowledge competencies. Susan Conway, Program Manager for handling this issue, set a goal to create an online competency profile for jobs and employees within Microsoft IS.

The project SPUD (Skills Planning "und" Development, managed by the "learning and communication resources" group) was started with focus on the entry-level competencies and on those who needed and required to stay on the leading edge of the workplace. The goal of this project was to test the competency model, and use it to transfer and build knowledge.

The success of this pilot project (SPUD) leads towards extension of the process to all people and their jobs in the Microsoft IT group. Further implementation was proceeding across geography and function from operations to applications function, and all jobs in Europe. Susan Conway saw this model as a vehicle for institutionalizing innovation in the fast-changing scenario.

Active involvement by everyone in the organization is important for knowledge management. It is critical for employees and supervisors to have a feeling that they contributed to the development of templates for jobs. This will lead towards more involvement of them into the competency model. Figure 1 shows the reinforcing loop of Microsoft knowledge management process.



**Figure 1: Reinforcing Loop of Microsoft**

In the initial phase of the pilot project, knowledge transfer was the key performance parameter. The success of the pilot project extends the knowledge management process to other groups. The successful completion of the project in one-or two functions further open the gate for broader use including all the functions geographically. This expansion gives more accessibility to the organizational members and hence results more involvement and innovation in the organization that pushes development of products/services and ultimately enhances the knowledge transfer. (Akhavan *et al.*, 2006, [1], [2])

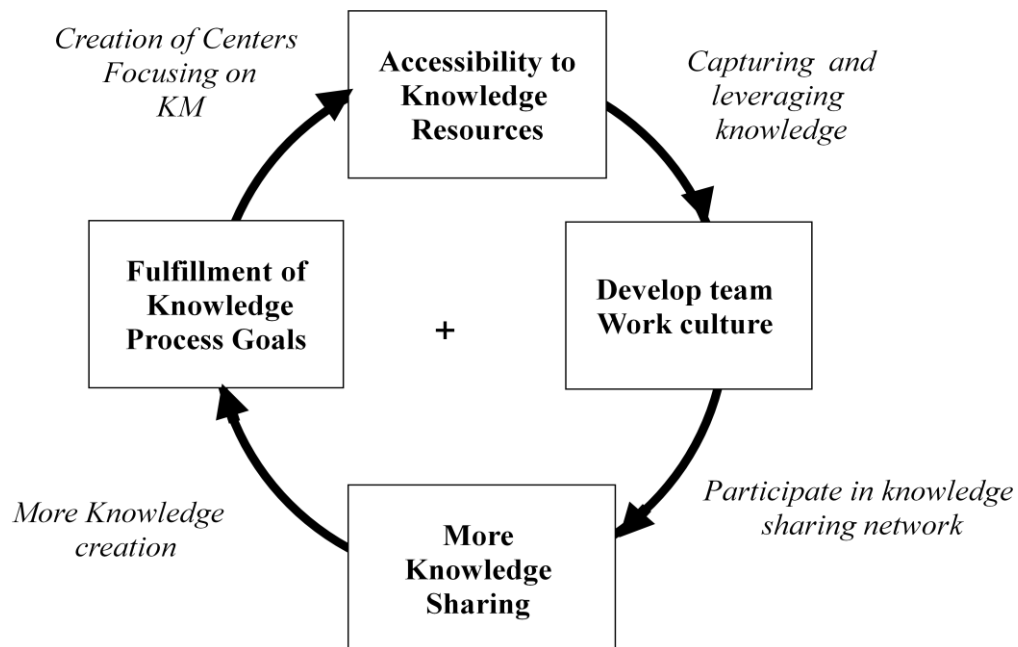
*(Keywords: accessibility, change, innovation, knowledge competency, knowledge transfer, people involvement)*

### **Caselet 2 - Ernst & Young**

This organization was formed by Arthur Young and Ernst and Whinney in 1989. Some of the services offered by this organization are in the area of Audit, Tax, and management consulting. According to its new strategic plan, announced in 1993, operational vision has been defined into five key processes; i) sales; ii) service; iii)

delivery; iv) people; and v) knowledge. Goals had been defined for knowledge process some of which are like capturing and leveraging knowledge from consulting engagements. E&Y believes that there is a requirement to make a balance between stability and rapid change and this can be achieved by being a flexible organization [2].

E&Y had created three centers for improving the accessibility of knowledge resources and technology that developed a culture of teamwork in the organization. A Knowledge process committee, consists of senior consulting partners, had been formed for advising the directors of the three centers. Commitment of people, who address the importance of managing knowledge, who leverage knowledge to support productive, practical service for customers, participation in knowledge sharing networks, rewards for knowledge sharing, training in knowledge-sharing as a part of new hire orientation program, are some of the dimensions of its knowledge culture (Akhavan *et al.*, 2006, [3]). Figure 2 describe the reinforcing loop E&Y KM process.



**Figure 2: Reinforcing Loop for E&Y**

In E&Y, fulfillment of knowledge goals was the ultimate objective. For this, the organization has created three different centers due to which accessibility of knowledge resources was becoming easier and that helps in easy capturing and leveraging of knowledge, which developed a teamwork culture in the organization. Due to this kind of teamwork culture, the participation increased and as a result, more knowledge sharing was occurring. More sharing of knowledge increases chances of further new knowledge creation that ultimately fulfill the knowledge process goals in the organization.

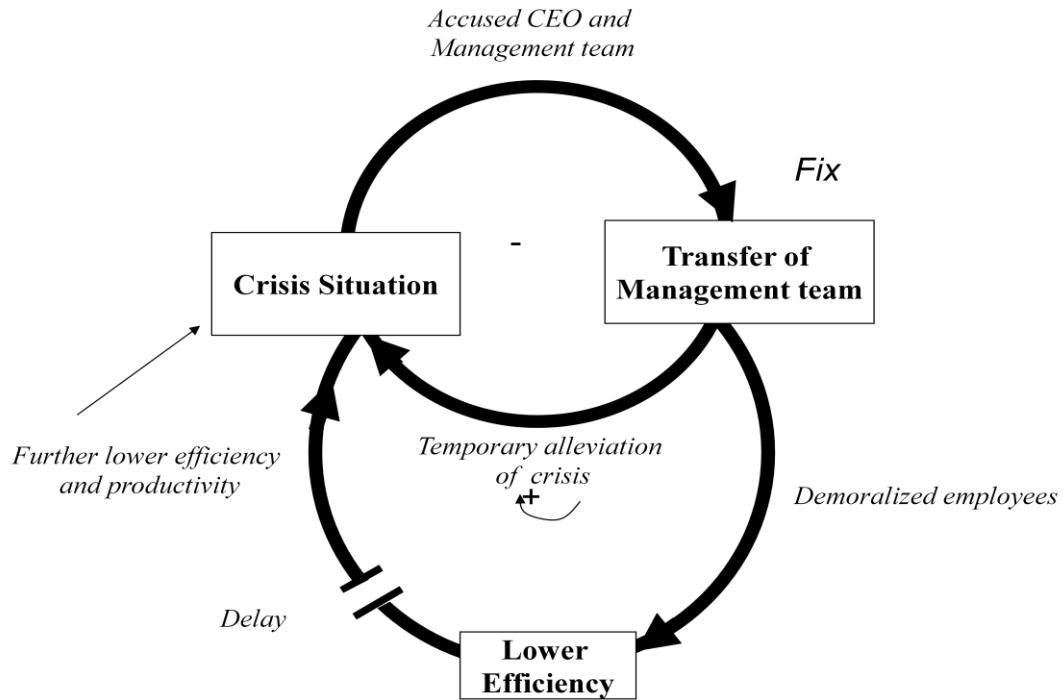
(*Keywords: accessibility, change, culture, knowledge creation, knowledge sharing*)

### ***Caselet 3 - PNGC***

This organization was founded in 1988 with an objective to deliver natural gas to the citizens of Pan County in a safe and convenient manner. It was facing a crisis in one of its projects, which was related to acquiring new business customers in Dolphin Industrial Park (an emerging industrialized area in the southern region). Initially they were not able to resolve the crisis situation, and management team and CEO were accused for the losses. The possibility of personnel transfers demoralized employees and hence lowered their efficiency and productivity.

After realizing that internal organizational knowledge is not sufficient to generate appropriate solutions during this crisis, it looked for exploiting the knowledge externally. Knowledge communities and a trust-based relationship with experts in the organization help in overcoming this kind of crisis. The trusts among the members lead to intra and inter organizational collaboration and knowledge sharing among the employees, and support them to locate and identify relevant knowledge. The key issues represented in Figure 3, is an example of the fixes that backfire loop (Senge, 1990).





**Figure 3: Fixes that Backfires loop for PNGC**

Initially, PNGC organization was facing some crisis due to lack of collaboration and lack of proper knowledge. The management team was accused for the crisis initially but that demoralized the employees and hence leads to lower efficiency and productivity, which further increases the crisis in the organization. (Wang and Belardo, 2009)

*(Keywords: crisis, collaboration, knowledge sharing, trust)*

#### **Caselet 4 - CNGC**

CNGC was founded in 1985 to provide natural gas to the citizens of Chain City. The organization had faced a crisis situation in its one of the project of acquiring new business customers from Whale Industrial Park. The failure was due to customer reluctance towards shifting to CNGC's because of two concerns: i) cost-effectiveness; and ii) security. The company held the management team responsible and proposed replacement of some top executives.

Using the knowledge of experts from inside and outside of the organization, it was able to reduce the cost and improve the security perspective by developing and monitoring the status of the facilities. The customers were impressed by the organization's sincere efforts and it gained the trust of the customers which was critical in acquiring new customers.

CNGC took the crisis as a learning opportunity and gained much learning during this in the form of gaining the expertise knowledge from other organizations. It integrated the knowledge to generate new techniques and processes which helped further in improving the safety concern, gaining customer trust, and cost advantage. The Knowledge strategy applied by the organization was a kind of innovation approach, which leads to attract more customers in a faster and easy manner.

CNGC employed the unbounded innovator knowledge sharing to perform effective learning practice so that it can react proactively or at least reduce the loss for this kind of issues in future. Figure 4 represents the fixes that backfire loop for CNGC.

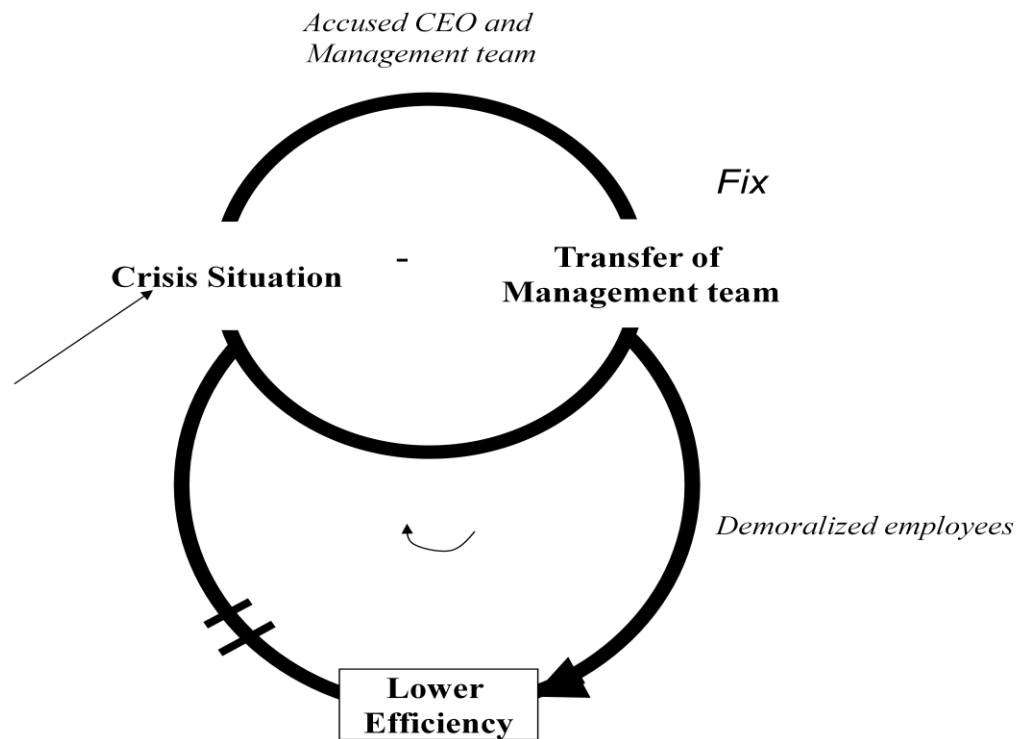


Figure 4: Fixes that Backfire CNGC

Similar to the case of PNGC, CNGC was also facing some crisis during its project of acquiring new business customers from Whale Industrial Park. The real problem was due to the customer reluctance because of cost and security reason. The organization held the top management team responsible for this and decided to transfer of some of the team members but this may demoralize the members and leads to lower efficiency and productivity.

Realizing this, organization goes for other solution of acquiring the knowledge from inside and outside both and reduced the cost and improves the safety concern (Wang and Belardo, 2009).

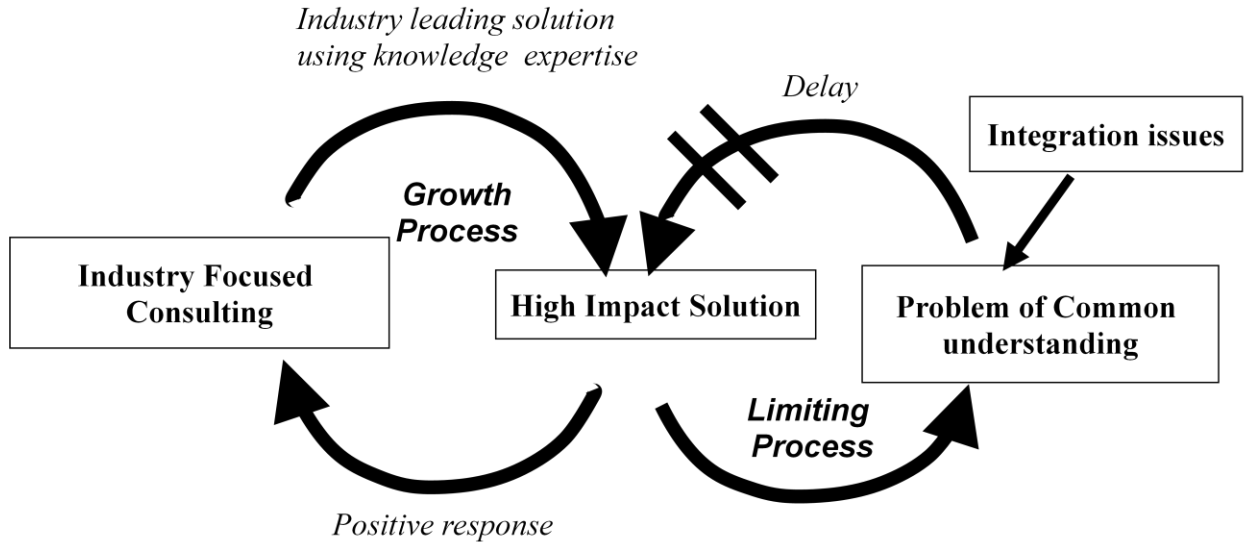
*(Keywords: collaboration, crisis, innovation, knowledge sharing, learning, trust)*

### ***Caselet 5 - Knowledge Management at BusinessEdge Solutions***

BusinessEdge Solutions was founded in 1999 with a focus on industry-focused consulting. The industry focus was on the communications, financial services, life sciences, and insurance. It was committed to formulate industry-leading, visionary solution strategies for challenges and deliver industrial-strength solutions to its clients using its highly experienced teams. To deliver high-impact solutions to its clients/customers the organization has focused on integration issues and combined its in-depth industry knowledge with expertise in leading edge IT.

The problem in BusinessEdge was to define a common understanding and value proposition of knowledge management for its research and development. The research team for knowledge management analyzed the organization's culture and structure for achieving the main objectives of KM program.

After collaborative actions, a common definition of KM and framework was accepted and a roadmap was developed to create actionable items based on people, process, technology and business alignment views. Figure 5 is an example of limits to growth loop for BusinessEdge Solutions.



**Figure 5: Limits to Growth for BusinessEdge Solutions**

Due to industry focused consulting policy, BusinessEdge Solutions was able to provide industry leading visionary solutions using its knowledge base. These kinds of industry-focused solution have a high impact on its clients, which gives a positive feedback and pushes organization to focusing more on the industry specific solutions. Integration issue is one of the limiting factors in the process. Due to lack of proper integration, there is a problem of developing a common understanding among the people, which causes delay in the solution process and effect the impact on the clients in a negative way. (Akhavan *et al.*, 2009)

(Keywords: collaboration, culture, integration, km framework)

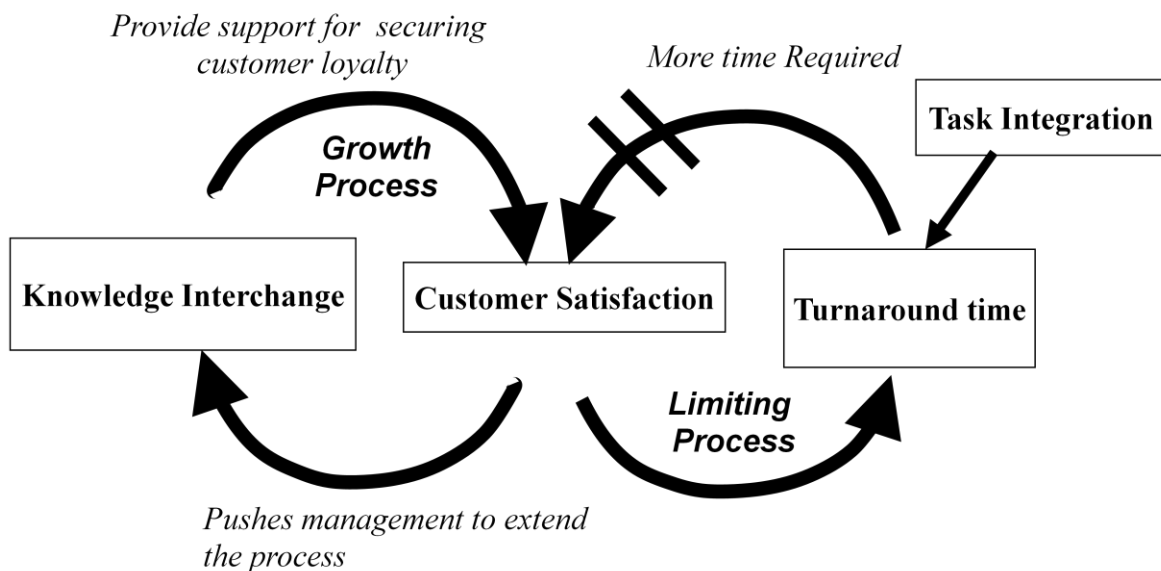
### **Caselet 6 - H-Bank**

H- Bank is a consumer bank headquartered in Hong Kong. It won the most innovative bank award in the country in 2005. In the implementation of pilot KM project, knowledge interchange/exchange has been given more importance with technical realization. Initially, the aim of knowledge exchange was to provide support for securing customer loyalty by way of quick and high-quality customer service. Knowledge interchange program was integrated with several line-of-business (LOB) applications and was developed using web-based technology.

The integration of its back end database helps for knowledge interchange purpose that leads to better customer service and loyalty, i.e. more customer satisfaction, which was one of the aims of the H-Bank.

A customer survey was conducted after six months of implementation and 87 per cent of the users rated the satisfaction level as very high, with improved operational efficiency and reduced (12 minutes from 23 minutes) turnaround time per customer per call. This kind of positive response pushes management to extend this to other departments also.

The use of the technical infrastructure and the content of knowledge interchange saved money, time and organizational resources in H-Bank. The two difficulties faced in this process were; i) difficulty in tasks integration across the departments; and ii) The full-text search process while the agents use key word search. Other than this the users from the marketing or business intelligence department, required concept search also. The departments were not clear about what they want from the process. Figure 6 shows the limits to growth loop for H-Bank.



**Figure 6: Limits to Growth for H-BANK**

Customer satisfaction is one of the performance parameter in H-Bank. Knowledge interchange process helps in providing support for securing customer loyalty and by

developing better communication this can be achieved. If customers are satisfied, management focuses more on the knowledge interchange process. In H-bank, task integration is one of the serious concerns and it put some kind of limitation in the whole process. The integration with other department effect the turnaround time and that causes some kind of delay in the whole process. (Chua, 2009)

(Keywords: customer satisfaction, innovation, integration, knowledge interchange/exchange)

### Synthesis and Discussion

The key dimensions identified from the caselets have been presented in Table 1.

**Table 1: Dimensions Identified from Caselets**

<b>Organization</b> <b>Dimension</b>	<b>Microsoft</b>	<b>E&amp;Y</b>	<b>PNGC</b>	<b>CNGC</b>	<b>Business Edge Solutions</b>	<b>H- Bank</b>	<b>Total no. of case lets supporting this dimension</b>
Accessibility	Y	Y					<b>2</b>
Change	Y	Y					<b>2</b>
Innovation	Y			Y		Y	<b>3</b>
Knowledge Competency	Y						<b>1</b>
Involvement	Y						<b>1</b>
Culture		Y			Y		<b>2</b>
Knowledge Creation		Y					<b>1</b>
Knowledge Transfer/interchange Sharing	Y	Y	Y	Y		Y	<b>5</b>
Crisis			Y	Y			<b>2</b>
Collaboration			Y	Y	Y		<b>3</b>
Trust			Y	Y			<b>2</b>
Learning				Y			<b>1</b>
Integration					Y	Y	<b>2</b>
KM Framework					Y		<b>1</b>
Customer Satisfaction						Y	<b>1</b>

The number of dimensions identified from each caselet is within the range of 4-6. Total 15 dimensions have been selected out of six caselets. Knowledge sharing is having the maximum frequency and is highlighted in five caselets (Microsoft, E&Y, PNGC, CNGC, and H-Bank) although the different terms have been used in different caselets like knowledge transfer, knowledge exchange and so on. Innovation (Microsoft, CNGC and H-Bank) and collaboration (PNGC, CNGC and BusinessEdge Solutions) are the other two issues with maximum presence in the organization (raised in 3 caselets). The other issues that are discussed in the caselets are trust, culture, integration, accessibility, change, and crisis.

Environmental uncertainty, change, crisis, integration are some of the issues that have been discussed in literature and considered as important factors for organizational growth. The caslets analysis also have similar findings like in crisis situation, importance of external and internal knowledge has been raised in PNGC and CNGC and environmental uncertainty and change are also reflected in Microsoft, E&Y cases. These kinds of issues can be managed using the knowledge management process with consideration of other issues like integration (raised in H-Bank and BusinessEgde), accessibility (Microsoft and E&Y), and developing a supportive collaborative culture.

Espejo (1994) has defined Systems thinking as “Systemic thinking is an understanding of how the parts relate to each other and constitute larger wholes, that is, of self-organizing processes”. The issues identified in this study like integration, reachability also reflecting the similar thing that organizations should be considered as an open system which is a combination of different parts.

The feedback loop analysis of all the caselets have been already discussed with the respective caselets itself.

## Conclusion and Future Research

This study reflects that in the current fast changing scenario where the environment is uncertain a system view of organization is required. The processes in organizations are not independent rather they are interrelated. Other dimensions like culture, integration, change, resource availability, people involvement etc are also relevant for success of knowledge management process. From the caselets and previous studies it is clear that for reaching to the peak of success and growth, and sustaining that for a longer period of time an organizations should be viewed as an open system where each process and functions are interrelated in some manner. These interrelations can be either in direct form or may be present in an indirect manner.

This study has been done selecting six caselets and literature review. More number of caselets can be taken for further study and better generalization. Primary data can also be collected and the result can be validated further. This kind of study can be taken as a starting step and a detailed case study can be done on single organization, considering all the feedback loops that will help in developing any strategy for a specific organization.

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